Claims 1-18 are objected to under 35 U.S.C. §112, second paragraph. Regarding claims 1-3, the Examiner's position is that it is not clear what the reflection and volume type layer or layers refer to. To respond to this, in claims 1-3, applicant adds to claim 1 the word --hologram-- after "single layer" and after "multilayer". This is respectfully believed to clarify any issues which might be of concern to the Examiner. This also resolves the issue on claims 2-7, 14 and 18.

The Examiner states that the language of the claims related to "shadows" is unclear. Applicants respectfully traverse and assert that it is entirely clear when considered in conjunction with the specification, since the standard under U.S. practice is that the claims are to be interpreted in light of the specification, so it is proper to rely on the specification for definition of terms in the claims. The English specification at page 12, line 17 and following pages provides text where the shadow concept is explained in detail, and applicants respectfully assert that the claims reciting shadows are acceptable under 35 U.S.C. §112, second paragraph.

Regarding claims 8-13, the Examiner alleges that the claims are incomplete. While it is believed that the claims are acceptable, claim 8 is amended slightly to clarify that there are process steps involved.

Regarding claim 10, the Examiner objects to the language "hologram plate". Amendments to claim 10 herein change the

language to recite ---color hologram display-- instead of "hologram plate".

The Examiner mentions claims 15 and 16 because they refer to a "subject hologram" in both the preamble of the claim and in the body of the claim, and the Examiner asserts that it is unclear whether these are the same subject holograms. In response to this objection the word "subject" is removed from the preamble of the claim so that is recites --A hologram plate-- instead of "A subject hologram plate".

In view of the above, the section 112 objections are believed to have been fully addressed and resolved. Claim 17 not being otherwise rejected, is therefore believed in condition for allowance.

Claims 1-3 rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Waitts, U.S. 5,956,164. Applicants respectfully traverse.

Claim 1 has been amended herein to clarify that the plane character or image is not on the hologram surface. Support for this is found, for example, in FIG. 7 of applicants' specification.

The Waitts document teaches something different than the claimed invention. In Waitts, the Examiner states there is a holographic area 312 referred to by the Examiner as for reconstructing a three-dimensional object and a diffraction grating area 326 for reconstruction two-dimensional color patterns (note the Examiner refers to FIG. 4 in the office

action, but item 312 is in FIG. 6. It is believed the Examiner intended to refer to FIG. 6).

This construction of Waitts is not, however, a combined reflection and volume type hologram, whether single or multilayer, and does not have a color hologram and plane image/character recorded therein. Waitts discusses partially over stamping the diffraction grating overlapping the hologram or by embossing the diffraction grating adjacent to the holographic area. (See Waitts at column 6, lines 8- 19). This does not meet the language of the claims 1-3, however, because those claims recite that the plane images and the hologram are recorded in the combined reflection and volume hologram. Also, in making the rejection the Examiner stated that the features of "reflection and volume type" are not addressed, because of section 112 rejections. Those issues are believed to be resolved, and Waitts shows something entirely different, and does not and could not record both the color hologram and plane images in the combined hologram.

Claims 4-7, 14, 18, 8-13 and 15-16 rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Waitts with Cowan (U.S. 4,888,260). Applicant respectfully traverses. Cowan does not add anything that would teach the claimed invention. Cowan is concerned with producing stepped surface relief structures (see FIG. 3 in Cowan, for example).

In light of the above noted amendments and remarks, this application is believed in condition for allowance and notice

thereof is respectfully solicited. The Examiner is asked to contact applicants' attorney at 503-224-0115 if there are any questions.

Respectfully submitted,

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Certification of Facsimile Transmission

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MARKUP SHEETS SHOWING AMENDMENTS MADE HEREIN

In the specification:

Page 14, line 19 through page 16, line 6, please replace the paragraph with the following paragraph (a markup to show the changes made is provided at the end of the response):

--The above embodiment is directed to the process of producing the color hologram display 27' of the present invention using the character hologram plate 1' (Fig. 4) and the subject hologram plate 21' (Fig. 6). However, the color hologram display of the present invention may be produced more easily as explained with reference to Fig. 8. As shown in Fig. 8, another volume hologram photosensitive material 31 is located in front of a three-dimensional subject O, and the character hologram plate 1' of Fig. 4 is placed between the volume hologram photosensitive material 31 and the three-dimensional subject O. In this condition, red light, green light and blue light in the form of illumination light 24rgb strike simultaneously or in arbitrary order on the volume hologram photosensitive material 31 from the opposite direction to the direction of incidence of the illumination light 8g used to make the character hologram plate 1'. Then, the illumination light 24rgb transmits through the volume hologram photosensitive material 31 and enters the character hologram plate 1', so that green scattered light 11g is diffracted from the character pattern portion such as a "ABC" pattern portion 1'a (see Fig. 4) in the direction of reflection.

The scattered light 11g and the green component of illumination, light 24rgb interfere in the volume hologram photosensitive material 31 so that the character "ABC" pattern can be recorded in the form of a reflection type hologram. At the same time, the illumination light 24rgb transmitting through the volume hologram photosensitive material 31 enters the three-dimensional subject O, so that scattered light 23rgb is produced from the subject O in the direction of reflection. This scattered light 23rgb and the illumination light 24rgb interfere in the volume hologram photosensitive material [32] 31, so that the full-color reflection type hologram of the three-dimensional subject O can be recorded in a multiplex fashion. The thus recorded color hologram display is different from the color hologram display 27' of Fig. 7 in that the shadow of the character pattern portion 1'a of the character hologram plate 1' is directly formed as an area 32 on the three-dimensional subject O. Upon reconstruction, this image is formed as a magenta shadow on the surface of the image of the three-dimensional subject O, and therefore the image of the shadow is not recorded in the form of a three-dimensional pseudoscopic image. --

In the Claims:

Please amend claims 1, 8, 10, 14, 15 and 16 as marked up below.

1. (Twice Amended) A color hologram display comprising a combined reflection and volume type of single layer hologram or multilayer hologram, wherein a color pattern of plane characters or images and a color three-dimensional subject image are reconstructably recorded therein while spatially superposed one upon another, and wherein the plane character or image is on other than a surface of the hologram.

8. (Twice Amended) A process of fabricating a color hologram display, [wherein] comprising recording a color three-dimensional subject image and a color pattern of plane characters or images [are recorded] as hologram images in the same photosensitive material.

10. (Amended) The color hologram display fabrication process according to claim 9, wherein an area of said hologram photosensitive material other than a portion thereof corresponding to said color pattern of plane characters or images is deactivated by photosensitization, and a reflection type hologram of a scatter plate is then recorded in said portion of said hologram photosensitive material to make said color hologram [plate] display.

14. (Twice Amended) A process of fabricating a color hologram display as recited in claim 7, [wherein] comprising the steps of employing a subject hologram plate for forming a color three-dimensional subject image and a character hologram plate

for reconstructing a color pattern image of plane characters or images, wherein said subject hologram plate and said character hologram plate are separately made, superposing said subject hologram plate and said character hologram plate [are superposed] one upon another, and providing diffracted light from said subject hologram plate and said character hologram plate [is] to simultaneously [entered] enter in the same photosensitive material to record said color three-dimensional subject image and said color pattern image of plane characters or images as hologram images.

15. (Twice Amended) A [subject] hologram plate used to fabricate a color hologram display, wherein a subject hologram plate for forming a color three-dimensional subject image and a character hologram plate for reconstructing a color pattern image of plane characters or images are separately made, said subject hologram plate and said character hologram plate are positioned with a given space located therebetween, and diffracted light from said subject hologram plate and said character hologram plate is simultaneously entered in the same photosensitive material to record said color three-dimensional subject image and said color pattern image of plane characters or images as hologram images.

16. (Twice Amended) A [subject] hologram plate used to fabricate a color hologram display wherein a subject hologram

plate for forming a color three-dimensional subject image and a character hologram plate for reconstructing a color pattern image of plane characters or images are separately made, said subject hologram plate and said character hologram plate are superposed one upon another, and diffracted light from said subject hologram plate and said character hologram plate is simultaneously entered in the same photosensitive material to record said color three-dimensional subject image and said color pattern image of plane characters or images as hologram images.